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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue
Seattle, WA 98101

December 11, 2003

**Reply To**
**Attn Of:** ORC-158

**URGENT LEGAL MATTER--PROMPT REPLY NECESSARY**
**VIA FEDERAL EXPRESS MAIL**

Teck Cominco Metals, Ltd.
c/o: Karen Dunfee
200 Burrard Street, Suite 600
Vancouver, B.C. Canada V6C 3L9

Re: Upper Columbia River Site

Dear Ms. Dunfee:

The U.S. Environmental Protection Agency ("EPA") is issuing the enclosed Unilateral Administrative Order ("UAO") to Teck Cominco Metals, Ltd. ("Teck Cominco") to perform a Remedial Investigation/Feasibility Study (RI/FS) at the Upper Columbia River Site in eastern Washington state. EPA asked Teck Cominco in December 2002 to perform the RI/FS study because of the 100 year history of discharges of slag and other contaminants to the Columbia River from Teck Cominco's Trail smelter. Although Teck Cominco was willing to enter negotiations with EPA, those negotiations ended on November 26, 2003, when Teck Cominco informed EPA that it was unwilling to enter into an administrative order on consent under CERCLA to conduct a RI/FS for the Upper Columbia River Site.

Under Section VII of the Order, Notice of Intent to Comply, Teck Cominco has ten days after the effective date of this Order to provide EPA with notice of its intent to comply with the Order. If Teck Cominco does not unequivocally commit to perform the work required in the Order, Teck Cominco shall be deemed to have violated the Order and to have failed or refused to comply with the Order.

If you have any questions regarding this Order, please feel free to contact me at (206) 553-7151, or Cara Steiner-Riley, Assistant Regional Counsel, at (206) 553-1142. For questions of a technical nature, you may also contact Sally Thomas at (206) 553-2102.

Sincerely,

Michael F. Gearheard, Director
Environmental Cleanup Office



Enclosure

cc: Fred Phillips, U.S. Department of Justice
Doug Horswill, Teck Cominco American Inc. and Teck Cominco Limited
Mark Edwards, Teck Cominco Metals Ltd.
David Godlewski, Teck Cominco America Inc.
Bruce DiLuzio, Teck Cominco America Inc.
Tom Campbell, Campbell George & Strong, LLP
Jim Pendowski, Washington State Department of Ecology
Joseph Pakootas, The Confederated Tribes of the Colville Indian Reservation
Warren Seyler, Spokane Tribe of Indians
Merrill Ott, Eastern Washington Council of Governments

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 10

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| IN THE MATTER OF:<br><br>UPPER COLUMBIA RIVER SITE<br><br><br>Teck Cominco Metals, Ltd.,<br><br>Respondent | UNILATERAL ADMINISTRATIVE ORDER FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY<br><br>U.S. EPA Region 10<br>CERCLA<br>Docket No. CERCLA-10-2004-0018<br><br>Proceeding Under Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §9606(a) |

## I. INTRODUCTION AND JURISDICTION

1. This Administrative Order ("Order") is being issued by the U.S. Environmental Protection Agency to Teck Cominco Metals, Ltd. ((hereinafter "Teck Cominco" or "Respondent"). The Order concerns the preparation and performance of a Remedial Investigation/ Feasibility Study ("RI/FS") as described in the attached Statement of Work ("SOW") (Attachment 1) at the Upper Columbia River Site (the "Site") in eastern Washington.

2. This Order is issued pursuant to the authority vested in the President of the United States by Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. § 9606(a) as amended ("CERCLA"), and delegated to the Administrator of the United States Environmental Protection Agency ("EPA") by Executive Order No. 12580, January 23, 1987, 52 Fed. Reg. 2923, as amended by Executive Order No. 13016, August 30, 1996, 61 Fed. Reg. 45871, further delegated to the Regional Administrators by EPA Delegation Nos. 14-14-A and 14-14-B and further redelegated to the Director, Office of Environmental Cleanup by Regional Delegations dated February 1, 2002, and October 5, 1998, respectively.

3. In issuing this Order, the objectives of EPA are: (a) to determine the nature and extent of

3. In issuing this Order, the objectives of EPA are: (a) to determine the nature and extent of contamination and the threat to the public health or welfare or the environment caused by the release or threatened release of hazardous substances, pollutants or contaminants at or from the Site; and (b) to determine and evaluate alternatives for remedial action to prevent, mitigate or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants or contaminants at or from the Site.

4. The activities conducted under this Order are subject to approval by EPA. The activities under this Order shall be conducted in accordance with all applicable EPA guidances, policies, and procedures.

## II. FINDINGS OF FACT

1. For purposes of this Order, the Upper Columbia River Site consists of the areal extent of contamination in the United States associated with the Upper Columbia River, and all suitable areas in proximity to the contamination necessary for implementation of response action. The Upper Columbia River is the principal inflow, contributing about 90% of the flow from a large drainage area in Canada and the United States to Franklin D. Roosevelt Lake (Lake Roosevelt), the reservoir behind Grand Coulee Dam. Approximately 15 river miles south of the U. S.-Canada border, the river becomes characteristic of a lake/reservoir due to the Grand Coulee Dam.

2. The reservoir was developed into a major recreational and economic resource for the surrounding area attracting more than one million visitors per year. Recreational use of the area has been extensive including activities such as fishing, swimming, camping, and boating. The Upper Columbia River and surrounding area is also habitat to wildlife, plants, a varied fish community, and other aquatic species, including species protected under the Endangered Species Act (ESA).

3. The Confederated Tribes of the Colville Indian Reservation (Colville Tribes) and the Spokane Tribe of Indians (Spokane Tribe) own reservation lands along the Upper Columbia River. The Colville Tribes and the Spokane Tribe have treaty-reserved rights and resources, and/or other rights, interests, or resources in the Site. The Colville Tribes petitioned EPA in August 1999, pursuant to Section 105 of CERCLA 42 U.S.C. § 9605, to conduct an assessment of hazardous substance contamination along the Columbia River extending approximately 150 river miles from the U.S.-Canada border to the Grand Coulee Dam.

4. EPA began conducting the site assessment in October 1999. EPA selected a Site Assessment Area from approximately river mile 745 near the U.S.-Canada border to river mile 675. This area is called the Upper Columbia River Site Assessment Area (Assessment Area). In conducting the site assessment, EPA found contaminants at the Upper Columbia River Site including, but not limited to, heavy metals such as arsenic, cadmium, copper, lead, mercury and zinc. EPA did not conduct an analysis for dioxin and furan in the Assessment Area, though these contaminants remain a concern. EPA also observed the presence of slag, a by-product of the smelting furnaces,

containing glassy ferrous granules and other metals, at beaches and other depositional areas at the Assessment Area.

5. The Site has been the subject of numerous studies by various governmental entities. Sources identified in these studies include releases from mining and milling operations, fertilizer production, smelting operations, pulp and paper production, sewage treatment plants, and other industrial activities.

6. Contaminants found at the Site are known to be toxic to humans and aquatic life. Routes of human exposure to slag and contaminated sediment include direct contact with slag on the beaches of the Upper Columbia River, contact with contaminated sediment during low draw down periods, inhalation of airborne particles, dermal contact, and ingestion. There is also a concern of human exposure from ingestion of lake/river water contaminated as a result of contact with slag or contaminated sediments. Consumption of fish, aquatic resources, native plants, and agricultural crops are also potential routes of human exposure.

7. Potential environmental effects of slag discharged to the Upper Columbia River include both chemical (increased metal loads, potential bioaccumulation, toxicity problems in biota) and physical (scouring of plants and animals from river substrates, severe erosion of fish gills, smothering of habitat) components. Some benthic organisms can accumulate toxins that are attached to sediment particles that the benthic organism ingests. Toxins accumulated in benthic organisms can be transferred up the food chain to higher predators such as fish.

8. EPA completed its site assessment in March 2003. Pursuant to the Hazard Ranking System, published as a federal regulation on December 14, 1990 (55 Fed. Reg. 51532), the Site received a hazardous ranking score above 28.50, making the Site eligible for listing on EPA's National Priorities List (NPL). Currently, the Site is being considered by EPA for possible inclusion on the NPL.

9. Respondent owns and operates an integrated smelting and refining complex in Trail, British Columbia (hereinafter referred to as the "Trail Smelter") situated approximately 10 river miles north of the U. S.-Canada border. Respondent has arranged for the disposal of its hazardous substances from the Trail Smelter into the Upper Columbia River by directly discharging up to 145,000 tonnes of slag annually prior to mid-1995. Effluent, such as slag, was discharged into the Columbia River through several outfalls at the Trail Smelter. The slag contains metals including, but not limited to, copper, lead, and zinc. The slag was carried downstream in the passing river current and settled in slower flowing quiescent areas. Effluent continues to be discharged from the Trail Smelter into the Columbia River.

10. The Trail Smelter facility also produces a variety of sulfur products and agricultural fertilizers which represent a potential source of mercury. Historically, the Trail Smelter discharged sulfur dioxide into the air increasing its discharge of sulfur dioxide from 4,700 tons a month to 10,000 tons a month in 1925. At that time, citizens of the town of Northport, Washington, situated just south of the U. S.-Canada border in the Columbia River valley, complained to local

and state officials that pollution from the Trail smelter was threatening their health and environment.

11. After the Site scored above a 28.50 on the HRS, EPA began to evaluate proposing the Site on the NPL for the purpose of obtaining federal funding for evaluation and future cleanup of the Site. At this time, Teck Cominco American Inc. ("TCAI") approached EPA and the surrounding local county governments expressing a willingness to perform an independent, limited human health study at the Site if EPA would delay proposing the Site for NPL listing.

12. EPA expressed its interest in working with Teck Cominco, in coordination with the State, Tribes, and local governments, in delaying a listing by entering a Superfund Alternative Agreement with Teck Cominco, in accordance with EPA's guidance on Response Selection and Enforcement Approach for Superfund Alternative Sites, issued June 24, 2002 ("SAS guidance"). Under EPA's SAS guidance, EPA may enter settlements at sites that require long-term response and are eligible to be placed on the NPL, but are not yet listed, as long as EPA takes steps to ensure equivalency in the absence of an NPL listing. For example, it is critical to ensure that settlements covering these response actions achieve cleanup levels equivalent to those required at NPL sites, and that EPA, tribes, states and natural resource trustees are in an equivalent enforcement posture as they would be if the site were listed.

13. EPA worked for eleven months discussing the Superfund Alternative approach with Teck Cominco, and performed an extensive outreach effort to coordinate with all the interested stakeholders, describing the process that would be necessary to postpone listing the Site on the NPL. Of critical importance under EPA's Superfund Alternative Sites guidance is that Teck Cominco must enter an agreement with EPA to perform a RI/FS of the Upper Columbia River Site. The Colville and Spokane Tribes, and Washington State, supported EPA postponing its listing of the Site as long as Teck Cominco agreed to all of the criteria outlined in EPA's Superfund Alternative Sites guidance.

14. After months of inconclusive discussions and ambiguous commitments from TCAI, EPA issued a Special Notice Letter and draft Administrative Order on Consent ("AOC") to Respondent on October 10, 2003, formally requesting the company to voluntarily commit to an AOC for an RI/FS under CERCLA authorities. Consistent with Section 122(e) of CERCLA, 42 U.S.C. § 9622(e), the Special Notice Letter triggered a 60 day moratorium, and invited Respondent to participate in formal negotiations with EPA.

15. TCAI responded to EPA's Special Notice Letter on behalf of Respondent. At all times relevant to these discussions, EPA agreed that TCAI could sign the RI/FS AOC for the Site as long as Respondent agreed to sign the tolling agreement with the relevant natural resource trustees.

16. EPA and TCAI spent approximately six weeks negotiating the terms for performing an acceptable RI/FS at the Site. Although TCAI expressed a repeated willingness to perform a human health and ecological risk assessment at the Site, under a legally binding contract with any interested government authority, TCAI and Respondent refused to sign an AOC to perform an

RI/FS at the Site under CERCLA authorities.

17. As a result, EPA concluded that the proposed study that TCAI was willing to perform would not provide the necessary information for EPA to select a remedy that would be protective of human health and the environment. EPA and TCAI ended negotiations on November 26, 2003. EPA wrote TCAI on December 9, 2003, again informing TCAI that the Special Notice Letter Negotiation Moratorium was ended.

18. EPA concluded that TCAI's proposed study would not provide the necessary information for EPA to select a remedy that was protective of human health and the environment because:

a. TCAI would not agree to address environmental and human health cleanup standards in its proposed study;

b. TCAI's proposal was limited to a study of risk only, and used ambiguously defined approaches to address site characterization, data gap analysis, fate and transport issues and alternatives analysis;

c. TCAI proposed a contractual agreement that redefined basic and reliable tenets of the CERCLA RI/FS process so that it was impossible to identify, or later enforce, what work TCAI was agreeing to perform (e.g., TCAI insisted that its proposed study, called a Human Health/Ecological Risk Assessment, constituted an entire RI/FS study, even though a human health/ecological risk assessment is only one component of EPA's RI/FS process);

d. TCAI would not agree to preserve the rights for trustees to file claims for natural resource damages in the same manner that all US companies in this situation must do.

e. TCAI committed to conduct work only "in general accordance" with EPA Superfund guidance.

## III. CONCLUSIONS OF LAW AND DETERMINATIONS

1. The Upper Columbia River Site is a "facility" as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

2. Wastes and constituents thereof at the Site, sent to the Site, disposed of at the Site, and/or transported to the Site identified in Section II are "hazardous substances" as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), or constitute "any pollutant or contaminant" that may present an imminent and substantial danger to public health or welfare under Section 104(a)(1) of CERCLA, 42 U.S.C. § 9604(a)(1).

3. The presence of hazardous substances at the Site or the past, present, or potential migration of hazardous substances currently located at or emanating from the Site, constitute actual and/or

threatened "releases" as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).
4. The actual or threatened release of one or more hazardous substances from the Site may present an imminent and substantial endangerment to the public health or welfare or the environment.

5. Respondent is a "person" as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

6. Respondent is a responsible party under Sections 104, 107, and 122 of CERCLA, 42 U.S.C. §§ 9604, 9607, and 9622.

7. The RI/FS required by this Order is necessary to abate an imminent and substantial endangerment because of an actual or threatened release of hazardous substances from the Site and protect the public health or welfare or the environment, is in the public interest, not inconsistent with CERCLA and the NCP, and will expedite effective remedial action.

## IV. NOTICE TO THE STATE

On December 8, 2003, prior to issuing this Order, EPA notified the State of Washington Department of Ecology (" DOE") that EPA would be issuing this Order.

## V. ORDER

Based on the foregoing, Respondent is hereby ordered to comply with the following provisions, including, but not limited to all attachments to this Order, all documents incorporated by reference into this Order, and all schedules and deadlines in this Order, attached to this Order, or incorporated by reference into this Order.

## VI. DEFINITIONS

Unless otherwise expressly provided herein, terms used in this Order which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in the statute or its implementing regulations. Whenever terms listed below are used in this Order or in the documents attached to this Order or incorporated by reference into this Order, the following definitions shall apply:

a. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601 et seq.

b. "Day" shall mean a calender day unless otherwise specified. In computing any period of time under this Order, in the event that a submission would fall on a Saturday, Sunday, or U.S. federal holiday, the period shall run until the end of the next business day.

c. "DOE" shall mean the Washington State Department of Ecology and any successor

departments or agencies of the State of Washington.

d. "EPA" shall mean the United States Environmental Protection Agency.

e. "Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

f. "National Contingency Plan" or "NCP" shall mean the National Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, including any amendments thereto.

g. "Order" shall mean this Unilateral Administrative Order and all appendices attached hereto. In the event of conflict between this Order and any attachments, this Order shall control.

h. "Paragraph" shall mean a portion of this Order identified by an Arabic numeral.

i. "Parties" shall mean EPA and Respondent.

j. "RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, *et seq.* (also known as the Resource Conservation and Recovery Act).

k. "Respondent" shall mean Teck Cominco Metals, Ltd.

l. "Section" shall mean a portion of this Order identified by a Roman numeral and includes one or more paragraphs.

m. "State" shall mean the State of Washington.

n. "Statement of Work" or "SOW" shall mean the statement of work for implementation as set forth in Attachment 1 to this Order. The Statement of Work is incorporated into this Order and is an enforceable part of this Order.

o. "Site" for purposes of this Order shall mean the Upper Columbia River Site that consists of the areal extent of contamination in the Upper Columbia River in the United States, and all suitable areas in the United States in proximity to the contamination necessary for implementation of response action. The Upper Columbia River is the principal inflow, contributing about 90% of the flow from a large drainage area in Canada and the United States, to Franklin D. Roosevelt Lake (Lake Roosevelt), the reservoir behind Grand Coulee Dam. Approximately 15 river miles south of the U. S.-Canada border, the river becomes characteristic of a lake/reservoir due to the Grand Coulee Dam. The Site will include all areas in the United States where hazardous substances from Respondent's Trail operations have migrated or materials

containing hazardous substances have come to be placed. The boundaries of the Site will be determined upon the issuance of EPA's Record of Decision after the Remedial Investigation/Feasibility Study is complete.

p. "United States" shall mean the United States of America.

q. "Work" shall mean all activities Respondent is required to perform under this Order, including any activities described in the SOW.

## VII. NOTICE OF INTENT TO COMPLY

Respondent shall provide, not later than ten (10) days after the effective date of this Order, written notice to EPA's Remedial Project Manager ("RPM") stating whether it will comply with the terms of this Order. If Respondent does not perform the Work, EPA may seek to enforce the terms of this Order pursuant to Sections 106(b) and 107(c)(3) of CERCLA. Respondent's written notice shall describe, using facts that exist on or prior to the effective date of this Order, any "sufficient cause" defenses asserted by Respondent under Sections 106(b) and 107(c)(3) of CERCLA. The absence of a response by EPA to the notice required by this Paragraph shall not be deemed to be acceptance of Respondent's assertions.

## VIII. PARTIES BOUND

1. This Order shall apply to and be binding upon Respondent and upon its directors, officers, employees, agents, successors, and assigns. No change in the ownership, corporate status, or other control of any of the entities referenced in this Paragraph shall alter any of Respondent's responsibilities under this Order.

2. Respondent shall provide a copy of this Order to any prospective owners or successors before a controlling interest in Respondent's assets, property rights, or stock are transferred to the prospective owner or successor. Respondent shall provide a copy of this Order to each contractor, sub-contractor, laboratory, or consultant retained to perform any Work under this Order, within five (5) days after the effective date pursuant to Section XXVI of this Order or on the date such services are retained, whichever date occurs later. Respondent shall also provide a copy of this Order to each person representing Respondent with respect to the Site or the Work and shall condition all contracts and subcontracts entered into hereunder upon performance of the Work in conformity with the terms of this Order. With regard to the activities undertaken pursuant to this Order, each contractor and subcontractor shall be deemed to be related by contract to Respondent within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. §9607(b)(3). Notwithstanding the terms of any contract, Respondent is responsible for compliance with this Order and for ensuring that its contractors, subcontractors and agents comply with this Order, and perform any Work in accordance with this Order.

## IX. WORK TO BE PERFORMED

1. Respondent shall cooperate with EPA in providing information regarding the Work to the public. As requested by EPA, Respondent shall participate in the preparation of such information for distribution to the public and in public meetings which may be held or sponsored by EPA to explain activities at or relating to the Site.

2. All aspects of the Work to be performed by Respondent pursuant to this Order shall be under the direction and supervision of a qualified project manager the selection of which shall be subject to approval by EPA. Within twenty (20) days after the effective date of this Order, Respondent shall notify EPA in writing of the name and qualifications of the project manager, including primary support entities and staff, proposed to be used in carrying out Work under this Order. If at any time Respondent proposes to use a different project manager, Respondent shall notify EPA and shall obtain approval from EPA before the new project manager performs any Work under this Order.

3. EPA will review Respondent's selection of a project manager according to the terms of Section IX Paragraph 2 of this Order. If EPA disapproves of the selection of the project manager, Respondent shall submit to EPA within five (5) days after receipt of EPA's disapproval of the project manager previously selected, a list of project managers, including primary support entities and staff, that would be acceptable to Respondent. EPA will thereafter provide written notice to Respondent of the names of the project managers that are acceptable to EPA. Respondent may then select any approved project manager from that list and shall notify EPA of the name of the project manager selected within twenty-one (21) days of EPA's designation of approved project managers.

4. Respondent shall conduct the RI/FS and submit deliverables as provided by the Statement of Work ("SOW"), Attachment 1. All such work shall be conducted in accordance with CERCLA, the NCP, and EPA guidance including, but not limited to, the "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (OSWER Directive # 9355.3-01), "Guidance for Data Usability in Risk Assessment" (OSWER Directive #9285.7-05) and guidances referenced therein, and guidances referenced in the SOW, as may be amended or modified by EPA. The tasks that Respondent must perform are described more fully in the SOW. The activities and deliverables identified below shall be developed as provided in the SOW, and shall be submitted to EPA as provided. All work performed under this Order shall be in accordance with the schedules herein, and in full accordance with requirements of the SOW, as initially approved or modified by EPA, and as may be amended or modified by EPA from time to time.

5. REMEDIAL INVESTIGATION/FEASIBILITY STUDY

a. The overall purpose of the RI/FS is to investigate and determine the full nature and horizontal and vertical extent of contamination at the Upper Columbia River Site, including all areas where contamination or contaminated material from Respondent's Trail facility has migrated or come to be placed, to develop and evaluate potential remedial alternatives that will prevent, mitigate or otherwise respond to or remedy any release or threatened release of hazardous

substances, pollutants or contaminants at or from the Site and that will be protective of human health and the environment. Respondent shall perform, at a minimum, all actions necessary to implement the work described in the SOW.

b. Work Plan and Implementation

i. As part of the work described in Section IX Paragraph 5 and in the SOW, the Respondent must submit a schedule for implementation of the required activities which shall include specific initiation and completion dates, and draft and final document submittal dates. The Respondent shall submit to EPA for review and comment work plans for performing the RI/FS activities set forth below and in the SOW. The work plans shall provide a description of, and a schedule for, the RI/FS activities required by this Order.

ii. EPA may approve, disapprove, require revisions to, or modify any work plan. If EPA requires revisions to any work plan, the Respondent shall submit a revised work plan within fifteen (15) days of receipt of EPA's notification of the required revisions. The Respondent shall implement each work plan as approved by EPA in accordance with the schedule approved by EPA. Once approved, or approved with modifications, each work plan, schedule, and any subsequent modifications shall be fully enforceable under this Order. The Respondent shall give EPA at least fourteen (14) days advanced notice of all field work or field activities to be performed by Respondent pursuant to Section IX Paragraph 5 of this Order.

iii. Respondent shall not commence or undertake any subsequent activities or tasks until receiving EPA approval for the RI/FS Work Plan.

iv. EPA reserves the right to stop Respondent from proceeding further, either temporarily or permanently, on any task, activity or deliverable at any point during the RI/FS.

v. Respondent shall assure that all work performed, samples taken and analyses conducted pursuant to Section IX Paragraph 5 of this Order, conform to the requirements of the RI/FS Work Plan and the EPA-approved quality assurance project plan (QAPP). Respondent shall assure that field personnel used by Respondent are properly trained in the use of field equipment and in chain of custody procedures.

c. Reporting. All work plans, reports, notices and other documents required to be submitted to EPA under this Order shall be sent by certified mail, return receipt requested, by overnight delivery or by courier. Respondent shall submit to EPA three (3) hard copies, one of which shall be unbound, and one (1) electronic copy of all work plans, reports, or other submissions required by this Order and the SOW. In preparation for the Scoping Meeting, within forty-five (45) days of this Order, Respondent shall provide a document detailing Existing Site Information, as required under Task 1 of the SOW. At the RI/FS Scoping meeting pursuant to Section IX Paragraph 5, EPA will provide Respondent with a list of additional state and peer review contacts that Respondent shall provide copies of all plans, reports or other submissions which are required by this Order, at the same time that Respondent makes the submission to EPA.

d. Scoping Meeting. Within sixty (60) days of the effective date of this Order, Respondent shall meet with EPA to discuss RI/FS Scoping Activities under Task 1, of the SOW. During the Scoping Meeting, appropriate deliverable dates for the tasks and deliverables outlined in the SOW will be determined.

e. Within thirty (30) days of the RI/FS Scoping Activities meeting, Respondent shall submit a Site Management Plan ("SMP") for the RI/FS to EPA. The SMP shall contain the project scope, general management approach and schedule for submittal of all workplans and documents pursuant to the SOW. If EPA disapproves of or requires revisions to the SMP, in whole or in part, Respondent shall amend and submit to EPA a revised SMP which is responsive to the directions in all EPA comments, within fifteen (15) days of receiving EPA's comments.

6. In the event that Respondent amends or revises a report, plan or other submittal upon receipt of EPA comments, if EPA in its discretion subsequently disapproves of the revised submittal or any portion thereof, or if subsequent submittals do not fully reflect EPA's directions for changes related to performance of the RI/FS, EPA retains the right, in its sole discretion, to seek statutory penalties, perform its own studies, complete the RI/FS (or any portion of the RI/FS) under CERCLA and the NCP, and seek reimbursement from the Respondent for its costs; and/or seek any other appropriate relief.

7. In the event that EPA takes over some of the tasks, but not the entire RI/FS, Respondent shall incorporate and integrate information supplied by EPA into the final RI/FS report, as applicable.

8. Neither failure of EPA to expressly approve or disapprove of Respondent's submissions within any time period, nor the absence of comments, shall be construed as approval by EPA.

9. Respondent shall, no less than ten (10) days prior to any off-site shipment of hazardous substances from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving state and to EPA's RPM of such shipment of hazardous substances within the time frame given in the SOW. However, the notification of shipments shall not apply to any such off-site shipments when the total volume of such shipments will not exceed 10 cubic yards.

a. The notification shall be in writing, and shall include the following information: (1) the name and location of the facility to which the hazardous substances are to be shipped; (2) the type and quantity of the hazardous substances to be shipped; (3) the expected schedule for the shipment of the hazardous substances; and (4) the method of transportation. Respondent shall notify the receiving state of any major change in the shipment plan, such as a decision to ship the hazardous substances to another facility within the same state, or to a facility in another state.

b. The identity of the receiving facility and state will be determined by Respondent following the award of the contract for any phase of the Work. Respondent shall provide to EPA all information on the off-site shipments, including but not limited to, all information included in Section IX Paragraph 9. a. Respondent shall provide the off-site shipment information as soon as

practical after the award of the contract and before the hazardous substances are actually shipped.

c. All hazardous substances, pollutants or contaminants removed off-site pursuant to this Order for treatment, storage, or disposal shall be treated, stored, or disposed of at a facility in compliance, as determined by EPA, pursuant to 42 U.S.C.§ 9621(d)(3) and the off-site rule at 40 CFR 300.440. Regional Offices will provide information on the acceptability of a facility under section 121(d)(3) of CERCLA and the rule.

## X. MODIFICATION OF THE WORK PLANS

1. Modifications to any plan or schedule or the attached EPA SOW may be made in writing by the RPM or at their oral direction. If the RPM makes an oral modification, it will be memorialized in writing within two (2) days by the RPM; provided, however, that the effective date of the modification shall be the date of the RPM's oral direction. The rest of the Order, or any other portion of the Order may only be modified in writing by signature of the delegated signatory or designee of EPA Region 10.

2. If Respondent seeks permission to deviate from any approved plan or schedule or SOW, Respondent's Project Coordinator shall submit a written request to EPA for approval outlining the proposed modification and its basis.

3. No informal advice, guidance, suggestion, or comment by EPA regarding reports, plans, specifications, schedules, or any other writing submitted by the Respondent shall relieve the Respondent of its obligation to obtain such formal approval as may be required by this Order, and to comply with all requirements of this Order unless it is formally modified.

## XI. ADDITIONAL RESPONSE ACTIONS

If EPA determines that additional response actions not included in an approved plan are necessary to protect public health, welfare, or the environment, EPA will notify Respondent of that determination. Unless otherwise stated by EPA, within fifteen (15) days of receipt of notice from EPA that additional response actions are necessary to protect public health, welfare, or the environment, Respondent shall submit for approval by EPA a Work Plan for the additional response actions. The plan shall conform to the applicable requirements of this Order and the SOW to this Order. Upon EPA's approval of the plan, Respondent shall implement the plan for additional response actions in accordance with the provisions and schedule contained therein. This Section does not alter or diminish the RPM's authority to make oral or written modifications to any plan or schedule pursuant to Section X of this Order.

## XII. FINAL REPORTS, PROPOSED PLANS, RECORD OF DECISION AND ADMINISTRATIVE RECORD

1. EPA shall be responsible for the release to the public of the final reports on the RI/FS. EPA shall be responsible for the preparation and release to the public of the proposed plan and Record

of Decision in accordance with CERCLA and the NCP.

2. EPA shall provide Respondent with the final reports on the RI/FS as well as any Record of Decision.

3. EPA will determine the contents of the Administrative Record file for selection of any response action. The Administrative Record file shall include those materials cited in 40 CFR 300.810. Respondent must submit to EPA all documents concerning the Site, developed during the course of the RI/FS which must be included in the Administrative Record file pursuant to 40 CFR 300.810. EPA may require Respondent to establish a community information repository at or near the Site, to house one copy of the Administrative Record.

## XIII. PROGRESS REPORTS

In addition to the deliverables set forth in this Order, Respondent shall provide to EPA monthly progress reports no later than the 10th day of the following month. At a minimum, with respect to the preceding month, these progress reports shall: (1) describe the actions which have been taken to comply with this Order during that month; (2) include all results of sampling and tests and all other data received by Respondent; (3) describe work planned for the next two months with schedules relating such work to the overall project schedule for the Work; and (4) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

## XIV. SAMPLING, ACCESS, AND DATA AVAILABILITY/ADMISSIBILITY

1. All sampling and analyses performed pursuant to this Order shall conform to EPA direction and approval regarding sampling, quality assurance/quality control (QA/QC), data validation, and chain of custody procedures. Respondent shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with the appropriate EPA guidance. Respondent shall follow the following documents as appropriate as guidance for QA/QC and sampling: "EPA Requirements for Quality Assurance Project Plans" (QA/R-5) (120KB)–March 2001, EPA/240/B-01/003; "Guidance on Choosing a Sampling Design for Environmental Data Collection" (G-5S) (1046KB), December 2002, EPA/240/R-02/005.

2. Upon request by EPA, Respondent shall have such a laboratory analyze samples submitted by EPA for quality-assurance monitoring. Respondent shall provide to EPA the quality assurance/quality control procedures followed by all sampling teams and laboratories performing data collection and/or analysis. Respondent shall only use laboratories that have a documented quality system which complies with ANSI/ASQC E-4 1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995) and "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by EPA. EPA may consider laboratories accredited under the National Environmental Laboratory

Accreditations Program (NELAP) as meeting the quality system requirements.

3. Upon request by EPA, the Respondent shall allow EPA or its authorized representatives to take split and/or duplicate samples. The Respondent shall notify EPA at least fifteen (15) days in advance of any sample collection activity, unless shorter notice is agreed to by EPA. EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow Respondent to take split or duplicate samples of any samples it takes as part of its oversight of Respondent's implementation of the Work

4. Respondent may assert a claim of business confidentiality covering part or all of the information submitted to EPA pursuant to the terms of this Order under 40 C.F.R. Section 2.20, provided such claim is allowed by Section 104(e)(7) of CERCLA, 42 U.S.C. Section 9604(e)(7). This claim shall be asserted in the manner described by 40 C.F.R. Section 2.203(b) and substantiated at the time the claim is made. Information determined to be confidential by EPA will be given the protection specified in 40 C.F.R. Part 2. If no such claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA or the state without further notice to Respondent. Respondent agrees not to assert confidentiality claims with respect to any data related to Site conditions, sampling, or monitoring.

5. Respondent shall provide and/or obtain access to the Site and off-Site areas owned and/or controlled by Respondent, to which access is necessary to implement this Order, and provide access to all records and documentation related to the conditions at the Site and the action conducted pursuant to this Order. Such access shall be provided to EPA employees, contractors, agents, consultants, designees, representatives, and State of Washington representatives. These individuals shall be permitted to move freely at the Site and appropriate off-site areas in order to conduct actions which EPA determines to be necessary.

6. If the Site, the off-Site area, or other property subject to or affected by the cleanup, or where documents required to be prepared or maintained by this Order are located, is controlled or owned in whole or in part by parties other than Respondent, Respondent will obtain, or use their best efforts to obtain, access agreements from such parties. Such agreements shall provide access for EPA, its contractors and oversight officials, the State and its contractors, and Respondent or Respondent's authorized representatives and contractors, and such agreements shall specify that Respondent is not EPA's representative with respect to liability associated with Site activities. Copies of such agreements shall be provided to EPA prior to Respondent's initiation of field activities. Respondent's best efforts shall include providing reasonable compensation to any off-Site property owner.

7. If access agreements are not obtained within the time referenced above, Respondent shall immediately notify EPA in writing of its failure to obtain access. EPA may use its legal authorities to obtain access for Respondent, may perform those tasks or activities requiring access with EPA contractors, or may terminate the Order if Respondent cannot obtain access agreements. If EPA performs those tasks or activities requiring access with EPA contractors and does not terminate the Order, Respondent shall perform all other activities not requiring such access. Respondent

shall integrate the results of any such tasks undertaken by EPA into its reports and deliverables. EPA reserves the right to seek cost recovery for all costs and attorney fees incurred by the United States to obtain access for Respondent.

8. Notwithstanding any provision of this Order, the United States retains all of its access authorities and rights under CERCLA and any other applicable statutes or regulations.

## XV. RECORD PRESERVATION

Respondent shall preserve all records and documents in its possession that relate in any way to the Site during the conduct of Work required by this Order and for a minimum of ten (10) years after commencement of construction of any response action. Respondent shall acquire and retain copies of all documents that relate to the site and are in the possession of its employees, agents, accountants, contractors, or attorneys. After this ten (10) year period, Respondent shall notify EPA at least ninety (90) days before the documents are scheduled to be destroyed. If EPA requests that the documents be saved, Respondent shall, at no cost to EPA, give EPA the documents or copies of the documents.

## XVI. ENDANGERMENT AND EMERGENCY RESPONSE

1. In the event of any action or occurrence during the performance of the Work which causes or threatens to cause a release of a hazardous substance or which may present an immediate threat to public health or welfare or the environment, Respondent shall immediately take all appropriate action to prevent, abate, or minimize the threat, and shall immediately notify EPA's RPM. If the RPM is unavailable Respondent shall notify the EPA Office of Emergency Response, Region 10 Duty Officer at (800) 424-8802 or (206) 553-1263 of the incident or Site conditions. Respondent shall take such action in consultation with EPA's RPM and in accordance with all applicable provisions of this Order, including but not limited to the Health and Safety Plan. In the event that Respondent fails to take appropriate response action as required by this Section, and EPA takes that action instead, EPA reserves the right to seek reimbursement from Respondent for all costs incurred by the United States.

2. In addition, in the event of any reportable release of a hazardous substance from the Site, Respondent shall immediately notify the Emergency Response Duty OSC at (206) 553-1263 and the National Response Center at (800) 424-8802. Respondent shall submit a written report to EPA within seven (7) days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.*

3. Nothing in the preceding Paragraph shall be deemed to limit any authority of the United States to take, direct, or order all appropriate action to protect human health and the environment

or to prevent, abate, or minimize an actual or threatened release of hazardous substances on, at, or from the Site.

## XVII. EPA REVIEW OF SUBMISSIONS

1. After review of any deliverable, plan, report or other item which is required to be submitted for review and approval pursuant to this Order, EPA may: (a) approve the submission; (b) approve the submission with modifications; (c) disapprove the submission and direct Respondent to re-submit the document after incorporating EPA's comments; or (d) disapprove the submission and assume responsibility for performing all or any part of the response action. As used in this Order, the terms "approval by EPA," "EPA approval," or a similar term means the action described in Subparagraphs (a) or (b) of this Paragraph.

2. In the event of approval or approval with modifications by EPA, Respondent shall proceed to take any action required by the plan, report, or other item, as approved or modified by EPA.

3. Upon receipt of a notice of disapproval pursuant to Section XVII Paragraph 1(c) of this Order or a request for a modification pursuant to Section XVII Paragraph 1(b), Respondent shall, within fifteen (15) days or such longer time as specified by EPA, correct the deficiencies and resubmit the plan, report, or other item for approval. Notwithstanding the notice of disapproval, or approval with modifications, Respondent shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submission.

4. If any submission is disapproved by EPA pursuant to Section XVII, Paragraph 1(d) of this Order, Respondent shall be deemed to be in violation of this Order.

## XVIII. COMPLIANCE WITH APPLICABLE LAWS

1. All activities by Respondent pursuant to this Order shall be performed in accordance with the requirements of all federal and state laws and regulations. EPA has determined that the activities contemplated by this Order are consistent with the NCP.

2. Respondent shall perform all actions required pursuant to this Order in accordance with all applicable local, tribal, state, and federal laws and regulations except as provided in CERCLA section 121(e) and 40 C.F.R. section 300.415(j). In accordance with 40 C.F.R. § 300.415(j), all on-site actions required pursuant to this Order shall, to the extent practicable, as determined by EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements (ARARs) under federal environmental, state environmental, tribal environmental, or facility siting laws. Respondent shall identify ARARs in the Work Plan subject to EPA approval.

3. This Order is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

## XIX. REMEDIAL PROJECT MANAGER

1. All communications, whether written or oral, from Respondent to EPA shall be directed to EPA's RPM. Respondent shall submit to EPA three (3) copies of all documents, including plans, reports, and other correspondence, which are developed pursuant to this Order, and shall send these documents by certified mail, return receipt requested or overnight delivery. Documents shall also be provided in electronic format.

EPA's RPM is:

Sally Thomas
EPA Project Coordinator
Environmental Cleanup Office
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue, Mail Code ECL-113
Seattle, Washington 98101
(206) 553-2102

2. EPA has the unreviewable right to change its RPM. If EPA changes its RPM, EPA will inform Respondent in writing of the name, address, and telephone number of the new RPM.

3. EPA's RPM shall have the authority lawfully vested in the RPM, by the National Contingency Plan, 40 C.F.R. Part 300. EPA's RPM shall have authority, consistent with the National Contingency Plan, to halt any work required by this Order, and to take any necessary response action.

## XX. DELAY IN PERFORMANCE

1. Any delay in performance of Work required under this Order that, in EPA's judgment, is properly justified by Respondent under the terms of this Section shall not be considered a violation of this Order. Any delay in performance of a specific task required under this Order shall not affect Respondent's obligations to fully perform all other obligations under the terms and conditions of this Order.

2. Respondent shall notify EPA of any delay or anticipated delay in performing any requirement of this Order. Such notification shall be made by telephone to EPA's RPM, as appropriate, within 48 hours after Respondent first knew or should have known that a delay might occur. Respondent shall adopt all reasonable measures to avoid or minimize any such delay. Within five (5) business days after notifying EPA by telephone, Respondent shall provide written notification fully describing the nature of the delay, any justification for delay, any reason why Respondent should not be held strictly accountable for failing to comply with any relevant requirements of this Order, the measures planned and taken to minimize the delay, and a schedule for implementing the measures that will be taken to mitigate the effect of the delay. EPA may, in its sole and unreviewable discretion, grant an extension of any schedule for good cause shown. Increased

costs or expenses associated with implementation of the activities called for in this Order are not a justification for any delay in performance.

## XXI. ASSURANCE OF ABILITY TO COMPLETE WORK

1. Within thirty (30) days after approval of any Work Plan for any response action, Respondent shall demonstrate its ability to complete the Work specified by the Work Plan and to pay all claims that arise from the performance of such Work by obtaining and presenting to EPA one of the following: (1) a performance bond; (2) a letter of credit; (3) a guarantee by a third party; or (4) internal financial information to allow EPA to determine that Respondent has sufficient assets available to perform the Work. Respondent shall demonstrate financial assurance in an amount no less than the estimate of cost for the response actions described in the Work Plan. If Respondent seeks to demonstrate ability to complete the response actions by means of internal financial information, or by guarantee of a third party, it shall re-submit such information annually. If EPA determines that such financial information is inadequate, Respondent shall, within thirty (30) days after receipt of EPA's notice of determination, obtain and present to EPA for approval one of the other three forms of financial assurance listed above.

2. At least seven (7) days prior to commencing any Work at the Site pursuant to this Order, Respondent shall submit to EPA a certification that Respondent or its contractors and subcontractors have adequate insurance coverage or have indemnification for liabilities for injuries or damages to persons or property which may result from the activities to be conducted by or on behalf of Respondent pursuant to this Order. Respondent shall ensure that such insurance or indemnification is maintained for the duration of the Work required by this Order.

## XXII. UNITED STATES NOT LIABLE

The United States, by issuance of this Order, assumes no liability for any injuries or damages to persons or property resulting from acts or omissions by Respondent, or its directors, officers, employees, agents, representatives, successors, assigns, contractors, or consultants in carrying out any action or activity pursuant to this Order. Neither EPA nor the United States may be deemed to be a party to any contract entered into by Respondent or its directors, officers, employees, agents, successors, assigns, contractors, or consultants in carrying out any action or activity pursuant to this Order.

## XXIII. ENFORCEMENT AND RESERVATIONS

1. EPA reserves the right to bring an action against Respondent under Section 107 of CERCLA, 42 U.S.C.§ 9607, for recovery of any response costs incurred by the United States related to the Site and not reimbursed by Respondent. This reservation shall include but not be limited to past costs, direct costs, indirect costs, the costs of oversight, the costs of compiling the cost documentation to support oversight cost demand, as well as accrued interest as provided in Section 107(a) of CERCLA.

2. Notwithstanding any other provision of this Order, at any time during the response action, EPA may perform its own studies, complete the response action (or any portion of the response action) as provided in CERCLA and the NCP, and seek reimbursement from Respondent for its costs, or seek any other appropriate relief.

3. Nothing in this Order shall preclude EPA from taking any additional enforcement actions, including modification of this Order or issuance of additional Orders, and/or additional remedial or removal actions as EPA may deem necessary, or from requiring Respondent in the future to perform additional activities pursuant to CERCLA, 42 U.S.C. § 9606(a), et seq., or any other applicable law. Respondent shall be liable under CERCLA Section 107(a), 42 U.S.C. § 9607(a), for the costs of any such additional actions.

4. Notwithstanding any provision of this Order, the United States hereby retains all of its information gathering, inspection and enforcement authorities and rights under CERCLA, RCRA and any other applicable statutes or regulations.

5. As provided in Section 106(b) of CERCLA, 42 U.S.C. § 9606(b), any person who, without sufficient cause, willfully violates, or fails or refuses to comply with, any order of the President under Section 106(a) may, in an action brought in the appropriate United States district court to enforce such order, be fined not more that $27,500 for each day in which such violation occurs or such failure to comply continues. Moreover, under Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3), "[i]f any person who is liable for a release or threat of release of a hazardous substance fails without sufficient cause to properly provide removal or remedial action upon order of the President pursuant to section 9604 or 9606 of this title, such person may be liable to the United States for punitive damages in an amount at least equal to, and not more than three times, the amount of any costs incurred by the Fund as a result of such failure to take proper action."

6. Nothing in this Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person for any liability it may have arising out of or relating in any way to the Site.

7. If a court issues an order that invalidates any provision of this Order or finds that Respondent has sufficient cause not to comply with one or more provisions of this Order, Respondent shall remain bound to comply with all provisions of this Order not invalidated by the court's order.

## XXIV. ADMINISTRATIVE RECORD

The Administrative Record file supporting these response actions is available for review at EPA Region 10 offices located at 1200 6th Avenue, Seattle, Washington.

## XXV. OPPORTUNITY TO CONFER

1. Respondent may, before the effective date of this Order, request a conference with EPA to

discuss this Order. If requested, the conference shall occur within seven (7) days of Respondent's request for a conference.

2. The purpose and scope of the conference shall be limited to issues regarding Respondent's compliance with the Order, implementation of the Work required by this Order and Respondent's intentions with respect to compliance with this Order. This conference is not an evidentiary hearing, and does not constitute a proceeding to challenge this Order. It does not give Respondent a right to seek review of this Order, or to seek resolution of potential liability, and no official stenographic record of the conference will be made. At any conference held pursuant to Respondent's request, Respondent may appear in person or be represented by an attorney or other representative.

3. Requests for a conference must be by telephone followed by written confirmation mailed that day to Cara Steiner-Riley, Assistant Regional Counsel, 1200 6th Ave., Seattle, WA 98101 at (206) 553-1142.

## XXVI. EFFECTIVE DATE AND COMPUTATION OF TIME

This Order shall be effective twenty (20) days after the day it is received by Respondent, unless a conference is requested as provided herein. All times for performance of ordered activities shall be calculated from this effective date. If a conference is requested, this order shall be effective ten (10) days after the day of the conference unless modified in writing by EPA.

So Ordered, this 11th day of December, 2003.

BY: _____

Michael F. Gearheard, Director
Environmental Cleanup Office
Region 10
U.S. Environmental Protection Agency

EFFECTIVE DATE: _____

# STATEMENT OF WORK FOR REMEDIAL INVESTIGATIONS AND FEASIBILITY STUDIES UPPER COLUMBIA RIVER SITE

## INTRODUCTION

The Purpose of this Remedial Investigation/Feasibility Study (RI/FS) is to investigate the nature and extent of contamination at the Upper Columbia River site, provide information for EPA to perform the baseline risk assessment for human health and the environment and develop and evaluate potential remedial alternatives. The RI and FS are interactive and may be conducted concurrently so that the data collected in the RI influences the development of remedial alternatives in the FS, which in turn affects the data needs and the scope of treatability studies.

The respondent will conduct this RI/FS except for the baseline risk assessment component and will produce a draft RI and FS report that are in accordance with this statement of work, the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (U.S. EPA, Office of Emergency and Remedial Response, October 1988), and any other guidance that EPA uses in conducting an RI/FS (a list of the primary guidance is attached), as well as any additional requirements in the administrative order. The RI/FS Guidance describes the report format and the required report content. The respondent will furnish all necessary personnel, materials, and services needed, or incidental to, performing the RI/FS, except as otherwise specified in the administrative order.

At the completion of the RI/FS, EPA will be responsible for the selection of a site remedy and will document this selection in a Record of Decision (ROD). The remedial action alternative selected by EPA will meet the cleanup standards specified in Section 121 of CERCLA. That is, the selected remedial action will be protective of human health and the environment, will be in compliance with, or include a waiver of, applicable or relevant and appropriate requirements of other laws, will be cost-effective, will utilize permanent solutions and alternative treatment technologies or resource recovery technologies, to the maximum extent practicable, and will address the statutory preference for treatment as a principal element. The final RI/FS report, as adopted by EPA, and EPA's baseline risk assessment will, with the administrative record, form the basis for the selection of the site's remedy and will provide the information necessary to support the development of the ROD.

As specified in Section 104(a)(1) of CERCLA, as amended by SARA, EPA will provide oversight of the respondent's activities throughout the RI/FS. The respondent will support EPA's initiation and conduct of activities related to the implementation of oversight activities.

TASK 1 - SCOPING

Scoping is the initial planning process of the RI/FS and is initiated by EPA prior to issuing special notice. During this time, the site-specific objectives of the RI/FS, including the preliminary remediation goals (PRGs), are determined by EPA. Scoping is therefore initiated prior to negotiations between the PRPs and EPA, and is continued, repeated as necessary, and refined throughout the RI/FS process. In addition to developing the site-specific objectives of the RI/FS, EPA will determine a general management approach for the site. Consistent with the general management approach, the specific project scope will be planned by the respondent and EPA. The respondent will document the specific project scope in a work plan. Because the work required to perform an RI/FS is not fully known at the onset, and is phased in accordance with a site's complexity and the amount of available information, it may be necessary to modify the work plan during the RI/FS to satisfy the objectives of the study.

When scoping the specific aspects of a project, the respondent must meet with EPA to discuss all project planning decisions and special concerns associated with the site. The following activities shall be performed by the respondent as a function of the project planning process.

a. Site Background

The respondent will gather and analyze the existing site background information and will conduct a site visit to assist in planning the scope of the RI/FS.

Collect and analyze existing data and document the need for additional data

Before planning RI/FS activities, all existing site data will be thoroughly compiled and reviewed by the respondent. Specifically, this will include presently available data relating to the varieties and quantities of hazardous substances at the site, and past disposal practices. This will also include results from any previous sampling events that may have been conducted. The respondent will refer to Table 2-1 of the RI/FS Guidance for a comprehensive list of data collection information sources. This information will be utilized in determining additional data needed to characterize the site, better define potential applicable or relevant and appropriate requirements (ARARs), and develop a range of preliminarily identified remedial alternatives. Data Quality Objectives (DQOs) will be established subject to EPA approval which specify the usefulness of existing data. Decisions on the necessary data and DQOs will be made by EPA.

Conduct Site Visit

The respondent will conduct a site visit during the project scoping phase to assist in developing a conceptual understanding of sources and areas of contamination as well as potential exposure pathways and receptors at the site. During the site visit the respondent should observe the sit's physiography, hydrology, geology, and demographics, as well as

natural resource, ecological, and cultural features. This information will be utilized to better scope the project and to determine the extent of additional data necessary to characterize the site, better define potential ARARs, and narrow the range of preliminarily identified remedial alternatives.

b. Project Planning

Once the respondent has collected and analyzed existing data and conducted a site visit, the specific project scope will be planned. Project planning activities include those tasks described below, as well as identifying data needs, developing a work plan, designing a data collection program, and identifying health and safety protocols. The respondent will meet with EPA regarding the following activities and before the drafting of the scoping deliverables below. These tasks are described in Section c of this task since they result in the development of specific required deliverables.

Refine and document preliminary remedial action objectives and alternatives

Once existing site information has been analyzed and an understanding of the potential site risks has been determined by EPA, the respondent will review and, if necessary, refine the remedial action objectives that have been identified by EPA for each actually or potentially contaminated medium. The revised remedial action objectives will be documented in a technical memorandum and subject to EPA approval. The respondent will then identify a preliminary range of broadly defined potential remedial action alternatives and associated technologies. The range of potential alternatives should encompass, where appropriate, alternatives in which treatment significantly reduces the toxicity, mobility, or volume of the waste; alternatives that involve containment with little or no treatment; and a no-action alternative.

Document the need for treatability studies

If remedial actions involving treatment have been identified by the respondent or EPA, treatability studies will be required, except where the respondent can demonstrate to EPA's satisfaction that they are not needed. Where treatability studies are needed, initial treatability testing activities (such as research and study design) will be planned to occur concurrently with site characterization activities (see Tasks 3 and 5).

Begin preliminary identification of potential ARARs

The respondent will conduct a preliminary identification of potential state and federal ARARs (chemical-specific, location-specific, and action specific) to assist in the refinement of remedial action objectives, and the initial identification of remedial alternatives and ARARs associated with particular actions. ARAR identification will continue as site conditions, contaminants, and remedial action alternatives are better defined.

c. Scoping Deliverables

At the conclusion of the project planning phase, the respondent will submit an RI/FS work plan, a sampling and analysis plan, and a site health and safety plan. The RI/FS work plan and sampling and analysis plan must be reviewed and approved by EPA prior to the initiation of field activities.

RI/FS Work Plan

A work plan documenting the decisions and evaluations completed during the scoping process will be submitted to EPA for review and approval. The work plan should be developed in conjunction with the sampling and analysis plan and the site health and safety plan, although each plan may be delivered under separate cover. The work plan will include a comprehensive description of the work to be performed, including the methodologies to be utilized, as well as a corresponding schedule for completion. in addition, the work plan must include the rationale for performing the required activities. Specifically, the work plan will present a statement of the problem(s) and potential problem(s) posed by the site and the objectives of the RI/FS. Furthermore, the plan will include a site background summary setting forth the site description including the geographic location of the site, and to the extent possible, a description of the site's physiography, hydrology, geology, demographics, ecological, cultural, and natural resource features; a synopsis of the site history and a description of previous responses that have been conducted at the site by local, state, federal, or private parties; a summary of the existing data in terms of physical and chemical characteristics of the contaminants identified, and their distribution among the environmental media at the site. The plan will recognize EPA's preparation of the baseline risk assessment. In addition, the plan will include a description of the site management strategy developed by EPA during scoping; a preliminary identification of remedial alternatives and data needs for evaluation of remedial alternatives. The plan will reflect coordination with treatability study requirements (see Tasks 1 and 4). It will include a process for and manner of identifying federal and state ARARs (chemical-specific, location-specific, and action-specific).

Finally, the major part of the work plan is a detailed description of the tasks to be performed, information needed for each task and for EPA's baseline risk assessment, information to be produced during and at the conclusion of each task, and a description of the work products that will be submitted to EPA. This includes the deliverables set forth in the remainder of this statement of work; a schedule for each of the required activities which is consistent with the RI/FS guidance; and a project management plan, including a data management plan (e.g., requirements for project management systems and software, minimum data requirements, data format and backup data management), monthly reports to EPA and meetings and presentations to EPA at the conclusion of each major phase of the RI/FS. The respondent will refer to Appendix B of the RI/FS Guidance for a comprehensive description of the contents of the required work plan.

Because of the unknown nature of the site and iterative nature of the RI/FS, additional data requirements and analyses may be identified throughout the process. The respondent will submit a technical memorandum documenting the need for additional data, and identifying the DQOs whenever such requirements are identified. In any event, the respondent is responsible for fulfilling additional data and analysis needs identified by EPA consistent with the general scope and objectives of this RI/FS.

Sampling and Analysis Plan

The respondent will prepare a sampling and analysis plan (SAP) to ensure that sample collection and analytical activities are conducted in accordance with technically acceptable protocols and that the data meet DQOs. The SAP provides a mechanism for planning field activities and consists of a field sampling plan (FSP) and a quality assurance project plan (QAPP).

The FSP will define in detail the sampling and data-gathering methods that will be used on the project. It will include sampling objectives, sample location and frequency, sampling equipment and procedures, and sample handling and analysis. The QAPP will describe the project objectives and organization, functional activities, and quality assurance and quality control (QA/QC) protocols that will be used to achieve the desired DQOs. The DQOs will, at a minimum, reflect use of analytic methods to identify contamination and remediate contamination consistent with the levels for remedial action objectives identified in the proposed National Oil and Hazardous Substances Pollution Contingency Plan (NCP), pages 51425-26 and 51433 (December 21, 1988). In addition, the QAPP will address sampling procedures, sample custody, analytical procedures, and data reduction, validation, reporting, and personnel qualifications. Field personnel should be available for EPA QA/QC training and orientation where applicable. The respondent will demonstrate, in advance and to EPA's satisfaction, that each laboratory it may use is qualified to conduct the proposed work. This includes use of methods and analytical protocols for the chemicals of concern in the media of interest within detection and quantification limits consistent with both QA/QC procedures and DQOs approved in the QAPP for the site by EPA. The laboratory must have and follow an approve QA program. If a laboratory not in the Contract Laboratory Program (CLP) is selected, methods consistent with CLP methods that would be used at this site for the purposes proposed and QA/QC procedures approved by EPA will be used. If the laboratory is not in the CLP program, a laboratory QA program must be submitted for EPA review and approval. EPA may require that the respondent submit detailed information to demonstrate that the laboratory is qualified to conduct the work, including information on personnel qualifications, equipment, and material specifications. The respondent will provide assurances that EPA has access to laboratory personnel, equipment, and records for sample, collection, transportation, and analysis.

Site Health and Safety Plan

A health and safety plan will be prepared in conformance with the respondent's health and safety program, and in compliance with OSHA regulations and protocols. The health and safety plan will include the eleven (11) elements described in the RI/FS Guidance, such as a health and safety risk analysis, a description of monitoring and personal protective equipment, medical monitoring, and site control. It should be noted that EPA does not "approve" the respondent's health and safety plan, but rather EPA reviews it to ensure that all necessary elements are included, and that the plan provides for the protection of human health and the environment.

## TASK 2 - COMMUNITY RELATIONS

The development and implementation of community relations activities are the responsibility of EPA. The critical community relations planning steps performed by EPA include conducting community interviews and developing a community relations plan. Although implementation of the community relations plan is the responsibility of EPA, the respondent may assist by providing information regarding the site's history, participating in public meetings, or by preparing fact sheets for distribution to the general public. Two or more baseline risk assessment memoranda will be prepared by EPA which will summarize the toxicity assessment and exposure assessment components of the baseline risk assessment. EPA will make these memoranda available to all interested parties for comment and place them in the Administrative Record. (EPA is not required, however, to formally respond to significant comments except during the formal public comment period on the proposed plan.) In addition, the respondent may establish a community information repository, at or near the site, to house one copy of the administrative record. The extent of PRP involvement in community relations activities is left to the discretion of EPA. The respondents' community relations responsibilities, if any, are specified in the community relations plan. All PRP-conducted community relations activities will be subject to oversight by EPA.

## TASK 3 - SITE CHARACTERIZATION

As part of the RI, the respondent will perform the activities described in this task, including the preparation of a site characterization summary and a RI report. The overall objective of site characterization is to describe areas of a site that may pose a threat to human health or the environment. This is accomplished by first determining a site's physiography, geology, and hydrology. Surface and subsurface pathways of migration will be defined. The respondent will identify the sources of contamination and define the nature, extent, and volume of the sources of contamination, including their physical and chemical constituents as well as their concentrations at incremental locations to background in the affected media. The respondent will also investigate the extent of migration of this contamination as well as its volume and any changes in its physical or chemical characteristics, to provide for a

comprehensive understanding of the nature and extent of contamination at the site. Using this information, contaminant fate and transport is then determined and projected.

During this phase of the RI/FS, the work plan, SAP, and health and safety plan are implemented. Field data are collected and analyzed to provide the information required to accomplish the objectives of the study. The respondent will notify EPA at least two weeks in advance of the field work regarding the planned dates for field activities, including ecological field surveys, field layout of the sampling grid, excavation, installation of wells, initiating sampling, installation, and calibration of equipment, pump tests, and initiation of analysis and other field investigation activities. The respondent will demonstrate that the laboratory and type of laboratory analyses that will be utilized during site characterization meets the specific QA/QC requirements and the DQOs of the site investigation as specified in the SAP. In view of the unknown site conditions, activities are often iterative, and to satisfy the objectives of the RI/FS it may be necessary for the respondent to supplement the work specified in the initial work plan. In addition to the deliverables below, the respondent will provide a monthly progress report and participate in meetings at major points in the RI/FS.

a. Field Investigation

The field investigation includes the gathering of data to define site physical and biological characteristics, sources of contamination, and the nature and extent of contamination at the site. These activities will be performed by the respondent in accordance with the work plan and SAP. At a minimum, this shall address the following:

Implement and document field support activities

The respondent will initiate field support activities following approval of the work plan and SAP. Field support activities may include obtaining access to the site, scheduling, and procuring equipment, office space, laboratory services, and/or contractors. The respondent will notify EPA at least two weeks prior to initiating field support activities so that EPA may adequately schedule oversight tasks. The respondent will also notify EPA, in writing, upon completion of field support activities.

Investigate and define site physical and biological characteristics

The respondent will collect data on the physical and biological characteristics of the site and its surrounding areas, including the physiography, geology, and hydrology, and specific physical characteristics identified in the work plan. This information will be ascertained through a combination of physical measurements, observations, and sampling efforts, and will be utilized to define potential transport pathways and human and ecological receptor populations. In defining the site's physical characteristics the respondent will also obtain sufficient engineering data (such as river/reservoir characteristics) for the projection of contaminant fate and transport, and development and

screening of remedial action alternatives, including information to assess treatment technologies.

Define sources of contamination

The respondent will locate each source of contamination. For each location, the areal extent and depth of contamination will be determined by sampling at incremental depths on a sampling grid. The physical characteristics and chemical constituents and their concentrations will be determined for all known and discovered sources of contamination. The respondent shall conduct sufficient sampling to define the boundaries of the contaminant sources to the level established in the QA/QC plan and DQOs.

Defining the source of contamination will include analyzing the potential for contaminant release (e.g., long term leaching from soil), contaminant mobility and persistence, and characteristics important for evaluating remedial actions, including information to assess treatment technologies.

Describe the nature and extent of contamination

The respondent will gather information to describe the nature and extent of contamination as a final step during the field investigation. To describe the nature and extent of contamination, the respondent will utilize the information and site physical and biological characteristics and sources of contamination to give a preliminary estimate of the contaminants that may have migrated. The respondent will then implement an iterative monitoring program and any study program identified in the work plan or SAP such that by using analytical techniques sufficient to detect and quantify the concentration of contaminants, the migration of contaminants through the various media at the site can be determined. In addition, the respondent will gather data for calculations of contaminant fate and transport. This process is continued until the area and depth of contamination are known to the level of contamination established in the QA/QC plan and DQOs. EPA will use the information on the nature and extent of contamination to determine the level of risk presented by the site. Respondent will use this information to help to determine aspects of the appropriate remedial action alternatives to be evaluated.

b. Data Analyses

Evaluate site characteristics

The respondent will analyze and evaluate the data to describe: (1) site physical and biological characteristics; (2) contaminant source characteristics; (3) nature and extent of contamination; and (4) contaminant fate and transport. Results of the site physical characteristics, source characteristics, and extent of contamination analyses are utilized in the analysis of contaminant fate and transport. The evaluation will include the actual and

potential magnitude of releases from the sources, and horizontal and vertical spread of contamination as well as mobility and persistence of contaminants. Where modeling is appropriate, such models shall be identified to EPA in a technical memorandum prior to their use. All data and programming, including any proprietary programs, shall be made available to EPA together with a sensitivity analysis. The RI data shall be presented in a format (i.e., computer disc or equivalent) to facilitate EPA's preparation of the baseline risk assessment. The Respondent shall agree to discuss and then collect any data gaps identified by EPA that is needed to complete the baseline risk assessment. (See "Guidance for Data Usability in Risk Assessment - OSWER Directive # 9285.7-05 - October 1990.) Also, this evaluation shall provide any information relevant to site characteristics necessary for evaluation of the need for remedial action in the baseline risk assessment and for the development and evaluation of remedial alternatives. Analyses of data collected for site characterization will meet the DQOs developed in the QA/QC plan stated in the SAP (or revised during the RI).

c. Data Management Procedures

The respondent will consistently document the quality and validity of field and laboratory data compiled during the RI.

Document field activities

Information gathered during site characterization will be consistently documented and adequately recorded by the respondent in well-maintained field logs and laboratory reports. The method(s) of documentation must be specified in the work plan and/or the SAP. Field logs must be utilized to document observations, measurements, and significant events that have occurred during field activities. Laboratory reports must document sample custody, analytical responsibility, analytical results, adherence to prescribed protocols, nonconformity events, corrective measures, and/or data deficiencies.

Maintain sample management and tracking

The respondent will maintain field reports, sample shipment records, analytical results, and QA/QC reports to ensure that only validated analytical data are reported and utilized in the development and evaluation of remedial alternatives. Analytical results developed under the work plan will not be included in any site characterization reports unless accompanied by or cross-referenced to a corresponding QA/QC report. In addition, the respondent will establish a data security system to safeguard chain-of-custody forms and other project records to prevent loss, damage, or alteration of project documentation.

d. Site Characterization Deliverables

The respondent will prepare the preliminary site characterization summary and once the baseline risk assessment (Task 4) is complete, the remedial investigation report.

Preliminary Site Characterization Summary

After completing field sampling and analysis, the respondent will prepare a concise site characterization summary. This summary will review the investigative activities that have taken place, and describe and display site data documenting the location and characteristics of surface and subsurface features and contamination at the site, including the affected medium, location, types, physical state, concentration of contaminants and quantity. In addition, the location, dimensions, physical condition and varying concentrations of each contaminant throughout each source, and the extent of contaminant migration through each of the affected media will be documented. The site characterization summary will provide EPA with a preliminary reference for developing the risk assessment, and evaluating the development and screening of remedial alternatives, and the refinement and identification of ARARs.

Remedial Investigation (RI) Report

The respondent will prepare and submit a draft RI report to EPA for review and approval. after completion of the baseline risk assessment (see Task 4). This report shall summarize results of field activities to characterize the site, sources of contamination, nature and extent of contamination, and the fate and transport of contaminants. The respondent will refer to the RI/FS Guidance for an outline of the report format and contents. Following comment by EPA, the respondent will prepare a final RI report which satisfactorily addresses EPA's comments.

TASK 4 - TREATABILITY STUDIES

Treatability testing will be performed by the respondent to assist in the detailed analysis of alternatives. In addition, if applicable, testing results and operating conditions will be used in the detailed design of the selected remedial technology. The following activities will be performed by the respondent.

a. Determination of Candidate Technologies and of the Need for Testing

The respondent will identify in a technical memorandum, subject to EPA review and approval, candidate technologies for a treatability studies program during project planning (Task 1). The listing of candidate technologies will cover the range of technologies required for alternatives analysis (Task 6.a.) The specific data requirements for the testing program will be determined and refined during site characterization and the development and screening of remedial alternatives (Tasks 2 and 6, respectively).

Conduct literature survey and determine the need for treatability testing

The respondent will conduct a literature survey to gather information of performance, relative costs, applicability, removal efficiencies, operation and maintenance (O&M) requirements, and implementability of candidate technologies. If practical candidate technologies have not been sufficiently demonstrated, or cannot be adequately evaluated for this site on the basis of available information, treatability testing will be conducted. Where it is determined by EPA that treatability testing is required, and unless the respondent can demonstrate to EPA's satisfaction that they are not needed, the respondent will submit a statement of work to EPA outlining the steps and data necessary to evaluate and initiate the treatability testing program.

Evaluation treatability studies

Once a decision has been made to perform treatability studies, the respondent and EPA will decide on the type of treatability testing to use (e.g., bench versus pilot). Because of the time required to design, fabricate, and install pilot scale equipment as well as perform testing for various operating conditions, the decision to perform pilot testing should be made as early in the process as possible to minimize potential delays of the FS. To assure that a treatability testing program is completed on time, and with accurate results, the respondent will either submit a separate treatability testing work plan or an amendment to the original site work plan for EPA review and approval.

b. Treatability Testing and Deliverables

The deliverables that are required, in addition to the memorandum identifying candidate technologies, where treatability testing is conducted, include a work plan, a sampling and analysis plan, and a final treatability evaluation report. EPA may also require a treatability study health and safety plan, where appropriate.

Treatability testing work plan

The respondent will prepare a treatability testing work plan or amendment to the original site work plan for EPA review and approval describing the site background, remedial technology(ies) to be tested, test objectives, experimental procedures, treatability conditions to be tested, measurements of performance, analytical methods, data management and analysis, health and safety, and residual waste management. The DQOs for treatability testing should be documented as well. If pilot scale treatability testing is to be performed, the pilot scale work plan will describe pilot plant installation and start-up, pilot plant operation and maintenance procedures, operating conditions to be tested, a

sampling plan to determine pilot plant performance, and a detailed health and safety plan. If testing is to be performed off-site, permitting requirements will be addressed.

Treatability study SAP

If the original QAPP or FSP is not adequate for defining the activities to be performed during the treatability tests, a separate treatability study SAP or amendment to the original site SAP will be prepared by the respondent for EPA review and approval. Task 1, Item c. of this statement of work provides additional information on the requirements of the SAP.

Treatability study health and safety plan

If the original health and safety plan is not adequate for defining the activities to be performed during the treatment tests, a separate or amended health and safety plan will be developed by the respondent. Task 1, Item c, of this statement of work provides additional information on the requirements of the health and safety plan. EPA does not "approve" the treatability study health and safety plan.

Treatability study evaluation report

Following completion of treatability testing, the respondent will analyze and interpret the testing results in a technical report to EPA. Depending on the sequence of activities, this report may be a part of the RI/FS report or a separate deliverable. The report will evaluate each technology's effectiveness, implementability, cost, and actual results as compared with predicted results. The report will also evaluate full scale application of the technology, including a sensitivity analysis identifying the key parameters affecting full-scale operation.

## TASK 5 - DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES

The development and screening of remedial alternatives is performed to develop an appropriate range of waste management options that will be evaluated. This range of alternatives should include, as appropriate, options in which treatment is used to reduce the toxicity, mobility, or volume of wastes, but varying in the types of treatment, the amount treated, and the manner in which long-term residuals or untreated wastes are managed; options involving containment with little or no treatment; options involving both treatment and containment; and a no-action alternative. The following activities will be performed by the respondent as a function of the development and screening of remedial alternatives.

a. Development and Screening of Remedial Alternatives

The respondent will begin to develop and evaluate a range of appropriate waste management options that, at a minimum, ensure protection of human health and the environment, concurrent with the RI site characterization task.

Refine and document remedial action objectives

Based on EPA's baseline risk assessment, the respondent will review and, if necessary, modify the site-specific remedial action objectives, specifically the PRG. The revised PRGs will be documented in a technical memorandum that will be reviewed and approved by EPA. These modified PRGs will specify the contaminants and media of interest, exposure pathways and receptors, and an acceptable contaminant level or range of levels (at particular locations for each exposure route).

Develop general response actions

The respondent will develop general response actions for each medium of interest defining containment, treatment, excavation, pumping, or other actions, singly or in combination, to satisfy the remedial action objectives.

Identify areas or volumes of media

The respondent will identify areas or volumes of media to which general response actions may apply, taking into account requirements for protectiveness as identified in the remedial action objectives. The chemical and physical characterization of the site will also be taken into account.

Identify, screen, and document remedial technologies

The respondent will identify and evaluate technologies applicable to each general response action to eliminate those that cannot be implemented at the site. General response actions will be refined to specify remedial technology types. Technology process options for each of the technology types will be identified either concurrent with the identification of technology types, or following the screening of the considered technology types. Process options will be evaluated on the basis of effectiveness, implementability, and cost factors to select and retain one or, if necessary, more representative processes for each technology type. The technology types and process options will be summarized for inclusion in a technical memorandum. The reasons for eliminating alternatives must be specified.

Assemble and document alternatives

The respondent will assemble selected representative technologies into alternatives for each affected medium or operable unit. Together, all of the alternatives will represent a range of treatment and containment combinations that will address either the site or the

operable unit as a whole. A summary of the assembled alternatives and their related action-specific ARARs will be prepared by the respondent for inclusion in a technical memorandum. The reasons for eliminating alternatives during the preliminary screening process must be specified.

Refine alternatives

The respondent will refine the remedial alternatives to identify contaminant volume addressed by the proposed process and sizing of critical unit operations as necessary. Sufficient information will be collected for an adequate comparison of alternatives. PRGs for each chemical in each medium will also be modified as necessary to incorporate any new risk assessment information presented in EPA's baseline risk assessment information presented in EPA's baseline risk assessment report. Additionally, action-specific ARARs will be updated as the remedial alternatives are refined.

Conduct and document screening evaluation of each alternative

The respondent may perform a final screening process based on short- and long-term aspects of effectiveness, implementability, and relative cost. Generally, this screening process is only necessary when there are many feasible alternatives available for detailed analysis. If necessary, the screening of alternatives will be conducted to assure that only the alternatives with the most favorable composite evaluation of all factors are retained for further analysis. As appropriate, the screening will preserve the range of treatment and containment alternatives that was initially developed. The range of remaining alternatives will include options that use treatment technologies and permanent solutions to the maximum extent practicable. The respondent will prepare a technical memorandum summarizing the results and reasoning employed in screening, arraying alternatives that remain after screening, and identifying the action-specific ARARs for the alternatives that remain after screening.

b. Alternatives Development and Screening Deliverables

The respondent will prepare a technical memorandum summarizing the work performed in and the results of each task above, including an alternatives array summary. These will be modified by the respondent if required by EPA's comments to assure identification of a complete and appropriate range of viable alternatives to be considered in the detailed analysis. This deliverable will document the methods, rationale, and results of the alternatives screening process.

TASK 6 - DETAILED ANALYSIS OF REMEDIAL ALTERNATIVES

The detailed analysis will be conducted by the respondent to provide EPA with the information needed to allow for the selection of a site remedy. This analysis is the final task to be performed by the respondent during the FS.

a. Detailed Analysis of Alternatives

The respondent will conduct a detailed analysis of alternatives which will consist of an analysis of each option against a set of nine evaluation criteria and a comparative analysis of all options using the same evaluation criteria as a basis for comparison.

Apply nine criteria and document analysis

The respondent will apply nine evaluation criteria to the assembled remedial alternatives to ensure that the selected remedial alternative will be protective of human health and the environment; will be in compliance with, or include a waiver of, ARARs; will be cost-effective; will utilize permanent solutions and alternative treatment technologies, or resource recovery technologies, to the maximum extent practicable; and will address the statutory preference for treatment as a principal element. The evaluation criteria include: (1) overall protection of human health and the environment; (2) compliance with ARARs; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume; (5) short-term effectiveness; (6) implementability; (7) costs; (8) state (or support agency) acceptance; and (9) community acceptance. (Note: Criteria 8 and 9 are considered after the RI/FS report has been released to the general public.) For each alternative, the respondent should provide: (1) a description of the alternative that outlines the waste management strategy involved and identifies the key ARARs associated with each alternative; and (2) a discussion of the individual criterion assessment. If the respondent does not have direct input on Criteria 8 state (or support agency) acceptance and (9) community acceptance, these will be addressed by EPA.

Compare alternatives against each other and document the comparison of alternatives

The respondent will perform a comparative analysis between the remedial alternatives. That is, each alternative will be compared against the others using the evaluation criteria as a basis of comparison. Identification and selection of the preferred alternative are reserved by EPA. The respondent will prepare a technical memorandum summarizing the results of the comparative analysis.

b. Detailed Analysis Deliverables

In addition to the technical memorandum summarizing the results of the comparative analysis, the respondent will submit a draft FS report to EPA for review and approval. Once

EPA's comments have been addressed by the respondent to EPA's satisfaction, the final FS report may be bound with the final RI report.

Feasibility study report

The respondent will prepare a draft FS report for EPA review and comment. This report, as ultimately adopted or amended by EPA, provides a basis for remedy selection by EPA and documents the development and analysis of remedial alternatives. The respondent will refer to the RI/FS Guidance for an outline of the report format and the required report content. The respondent will prepare a final FS report which satisfactorily addresses EPA's comments.

## REFERENCES FOR CITATION

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RI/FS process:


The (revised) National Oil and Hazardous Substance Pollution Contingency Plan (NCP).

"Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA", U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive No. 9355.3-01.

"Interim Guidance on Potentially Responsible Party Participation in Remedial investigation and Feasibility Studies", U.S. EPA, Office of Waste Programs Enforcement, Appendix A to OSWER Directive No. 9355.3-01.

"Guidance on Oversight of Potentially Responsible Party Remedial Investigations and Feasibility Studies", U.S. EPA, Office of Waste Programs Enforcement, OSWER Directive No. 9835.3.

"A Compendium of Superfund Field Operations Methods", Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.

"EPA NEIC Policies and Procedures Manual", May 1978, revised November 1984, EPA-330/9-78-991-R.

"Data Quality Objectives for Remedial Response Activities", U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.

"Guidelines and Specifications for Preparing Quality Assurance Project Plans", U.S. EPA, Office of Research and Development,, Cincinnati, Ohio, QAMS-004/80, December 29, 1980.

"Interim Guidelines and Specifications for preparing Quality Assurance Project Plans", U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.

"Users Guide to the EPA Contract Laboratory Program:, U.S. EPA, Sample Management Office, August 1982.

"Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements", U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.

"CERCLA Compliance with Other Laws Manual", Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (draft), OSWER Directive No. 9234.1-01 and -02.

"Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites", U.S. EPA, Office of Emergency and Remedial Response, (draft), OSWER Directive No. 9283.1-2.

"Draft Guidance on Preparing Superfund Decision Documents", U.S. EPA, Office of Emergency and Remedial Response, March 1988, OSWER Directive No. 9355.3-02.

"Risk Assessment Guidance for Superfund--Volume I, Human Health Evaluation Manual (Part A)", December 1989, EPA/540/1-89/002.

"Risk Assessment Guidance for Superfund--Volume II Environmental Evaluation Manual", March 1989, EPA/540/1-89/001.

"Guidance for Data Usability in Risk Assessment", October 1990, EPA/540/G-90/008.

"Performance of Risk Assessments in Remedial Investigation/ Feasibility Studies (RI/FSs) Conducted by Potentially Responsible Parties (PRPs)", August 28, 1990, OSWER Directive No. 9835.15.

"Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions", April 22, 1991, OSWER Directive No. 9355.0-30.

"Health and Safety Requirements of Employees Employed in Field Activities", U.S. EPA, Office of Emergency and Remedial Response, July 12, 1981, EPA Order No. 1440.2.

OSHA Regulations in 29 CFR 1910.120 (Federal Register 45654, December 19, 1986).

"Interim guidance on Administrative Records for Selection of CERCLA Response Actions", U.S. EPA, Office of Waste Programs Enforcement, March 1, 19889, OSWER Directive No. 9833.3A.

"Community Relations in Superfund: A Handbook", U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9320.0-03B.

"Community Relations During Enforcement Activities and Development of the Administrative Record", U.S. EPA, Office of Waste Programs Enforcement, November 1988, OSWER Directive No. 9836.0-1A.

STATEMENT OF WORK FOR
REMEDIAL INVESTIGATIONS AND FEASIBILITY STUDIES
UPPER COLUMBIA RIVER SITE
Deliverables List

Site Characterization

Existing Site Information (and Data Quality review) and Potential Site Risks*

Data Gap Analysis, to include a preliminary Conceptual Site Model, and preliminary Data Quality Objectives ***

Preliminary Remedial Action Objectives and Applicable and/or Relevant and Appropriate Requirements

Proposed Modeling Approach

Preliminary Treatability Study Determination

Remedial Investigation and Feasibility Study (RI/FS) Planning*

RI/FS Work Plan

Sampling and Analysis Plan (including a Field Sampling Plan and Quality Assurance Project Plan)

Health and Safety Plan

Data Management Plan

Site Characterization

Evaluation of Site Characteristics*

Contaminant Source Evaluation

Site Characterization Report (including revised Conceptual Model)

Remedial Investigation Report*

Treatability Studies

Determination of Candidate Technologies and of the Need for Testing

Treatability Testing Work Plan

Treatability Testing Sampling and Analysis Plan

Treatability Evaluation Report*

Development and Screening of Remedial Alternatives

Refine Remedial Action Objectives*

Develop General Response Actions

Identify Areas and/or Volumes*

Identify, Screen, and Document Remedial Technologies

Assemble Alternatives

Refine Alternatives

Conduct Screening Evaluation of Each Alternative*

Alternatives Array Summary

Detailed Analysis of Remedial Alternatives

Comparative Analysis

Feasibility Study Report*

* *These deliverables require both a draft (for agency comment) and final document*

*** *The Conceptual Site Model must address, but not limited to both geochemical processes and contaminant fate and transport*